REMARKS

Claims 1-24 are pending. Claims 1-14 and 20-24 have been withdrawn. Claim 15 has been amended herein. Support for the amendment is detailed below.

Applicants Response to the Rejection under 35 U.S.C. §103(a)

Claims 15-17 and 19 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Heo et al. (U.S. Patent No. 6,683,354) in view of Tanaka et al. (U.S. Patent No. 6,333,547). In response thereto, applicants have amended claim 15 to more distinctly claim the subject matter regarded as the invention. Specifically, applicants have added the phrase "wherein said liner of a silicon nitride film is retracted below the surface of said semiconductor substrate." Applicants respectfully submit that neither reference teaches or discloses this limitation.

In order for a claim to be rejected under §103 each and every limitation of the claims must be set forth in the prior art. In the present instance, the combination of Heo et al. and Tanaka et al. do not teach each and every limitation of claim 15. Specifically, the cited references fail to disclose "... a liner of a silicon nitride film ... retracted below the surface of said semiconductor substrate."

In the present invention, as illustrated in FIG. 2G and described in the specification at page 13, lines 13-20, the silicon nitride film 8 is completely etched by heated phosphoric acid. A recess amount R is thereby created between the surface of the substrate 1 and the remaining silicon nitride film 8 in the trench 6.

Recessing the silicon nitride layer, by various recess amounts, results in an increased drain current. See FIG. 1A and page 8, line 22 to page 9, line 12. The etching of the silicon

nitride liner below the surface of the substrate prevents the formation of divots on the upper surface and shoulder sidewall of the active region. See page 14, lines 18-22. Eliminating these divots helps to prevent the formation of a parasitic transistor upon the shoulder of the active region. See page 5, lines 10-16.

Heo et al., which is relied on in the Office Action for teaching a nitride film, teaches a silicon nitride film 15 which is formed in a shallow trench, but remains above the surface of the semiconductor substrate 10 even after the first silicon oxide film 23 is recessed. See FIG. 4 and col. 4, lines 50-52. The completed shallow trench maintains the silicon nitride film 15 above the surface of the substrate. See also FIG. 6.

Heo et al. also teaches away from etching the silicon nitride liner 15 by protecting the liner with a high temperature thermal oxide layer 17. See col. 3, lines 51-53. The high temperature thermal oxide layer 17 prevents the recessing of the silicon nitride liner 15 when the first silicon oxide film 21 is etched to a lower level 23. See FIGs. 3 and 4. Hence, one skilled in the art would not be motivated to modify Heo et al. to etch the silicon nitride liner below the surface of the substrate.

Claim 15 as amended includes a limitation that is not set forth in the prior art. Therefore, amended claim 15 and dependant claims 16, 17 and 19 are not obvious in light of the prior art.

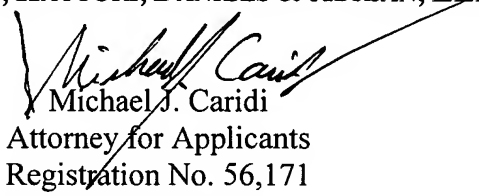
In view of the aforementioned amendments and accompanying remarks, Applicants submit that that the claims, as herein amended, are in condition for allowance. Applicants request such action at an early date.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney to arrange for an interview to expedite the disposition of this case.

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP



Michael J. Caridi
Attorney for Applicants
Registration No. 56,171
Telephone: (202) 822-1100
Facsimile: (202) 822-1111

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